



The Future Implications Of Chatgpt (AI Supported Tool) In Education: Review

Bindu N

Associate Professor, Sree Narayana College, Cherthala

Affiliated to the University of Kerala

Abstract

The emerging trends in Artificial intelligence have brought forward innovative tools among which ChatGPT is notable in the domain of education. The major objectives of this review is to identify the applications, benefits, challenges, and future prospects of ChatGPT in educational settings. By analyzing the current scenario and the practical implications, this review suggests a comprehensive conceptual model of AI supported tools like ChatGPT to enhance educational outcomes, support personalized learning, the key challenges to be encountered and the future prospects in the field.

Keywords: ChatGPT, AI tools in education, NLP

Introduction

ChatGPT(Chat Generative Pre-trained Transformer), the foremost Artificial intelligence language model, particularly trained on natural language processing (NLP) has gained significant attention for its potential to transform various sectors, including education. ChatGPT, developed by OpenAI. ChatGPT utilizes a generative pre-trained transformer architecture to understand and generate human-like text. This capability opens numerous possibilities for its application in educational environments, ranging from personalized tutoring to administrative support. Fuchs (2023), examined the dual-edged impact of Natural Language Processing (NLP) models like ChatGPT on higher education and highlighted the potential benefits, such as enhanced accessibility, personalized learning, and administrative efficiency. Allam et al. (2023) discussed the advantages and limitations of integrating ChatGPT into educational settings. The authors described how ChatGPT can enhance personalized learning and provide scalable educational support. The investigations of Castillo et al. (2023) were on the influences of ChatGPT on the learning experiences of university students in a digital context. The study found that ChatGPT significantly enhances student engagement and support through real-time assistance and personalized feedback. However, it also identifies challenges such as dependency on AI and potential issues with academic integrity, suggesting that careful integration and monitoring are necessary to maximize the benefits of ChatGPT in higher education. The exploration of Shidiq (2023) on the impact of ChatGPT on fostering creative writing skills in education revealed that while ChatGPT can enhance creativity by providing inspiration and constructive feedback, it also presents challenges such as potential over-reliance and diminished originality in student work. Shidiq emphasizes the need for balanced use and pedagogical strategies to ensure that ChatGPT supports rather than undermines the development of creative writing skills. However, it also addresses significant challenges, including concerns over academic integrity, the need for proper integration into curricula, and the risk of over-reliance on AI tools. While ChatGPT offers transformative

opportunities, careful consideration and strategic implementation are essential to mitigate its limitations and maximize its educational value Fuchs(2023), Yu (2023) explores the contentious debate over the use of ChatGPT in academic settings. The author argues against an outright ban, emphasizing that while ChatGPT poses challenges such as potential misuse and academic dishonesty, it also offers valuable opportunities for enhancing learning and teaching. Yu(2023), also advocates for a balanced approach that includes establishing guidelines and promoting ethical usage to harness ChatGPT's benefits while addressing its risks. Added to this, there are concerns about its impact on critical thinking and potential misuse (Allam et al. 2023). Allam et al. argued for a thoughtful integration of ChatGPT, emphasizing the need for guidelines to maximize its benefits while mitigating potential drawbacks. In this review, an attempt is made to analyze the current scenario and the future impacts of the use of AI Supported tools like ChatGPT in the domain of education. Mhlanga (2023) evaluated the impact of OpenAI's ChatGPT on contemporary education and its future prospects and illustrated how ChatGPT enhances current learning environments through personalized support, scalable resources, and efficient administrative tasks. Mhlanga(2023), also envisions the future applications, such as advanced tutoring systems and more interactive learning tools, which could further transform educational practices and accessibility.

I. Key Applications of ChatGpt in Education

There are many applications of ChatGPT in education mainly in language learning, writing assistance, automated grading and personalized learning. ChatGPT can By analyzing a student's learning patterns and preferences, ChatGPT can recommend specific learning resources, such as articles, videos, and textbooks, that are tailored to their needs Božić, Velibor et al(2023). The major application areas can be in 1. Personalized learning and tutoring 2. Homework and Assignment Assistance 3.Administrative Support and Grading and 4. Language Learning and Practice.

1.Personalized Learning and Tutoring

ChatGPT can serve as a virtual tutor, offering personalized assistance to students across various subjects. Its ability to provide instant feedback and adapt explanations based on the learner's responses makes it a valuable tool for differentiated instruction (Kumar et al., 2023). For example, ChatGPT can adjust its level of complexity depending on the student's proficiency, thereby catering to individual learning needs. Personalized learning through ChatGPT involves leveraging its AI capabilities to create adaptive learning experiences tailored to each student's needs. By analyzing a student's performance and learning style, ChatGPT can adjust the complexity of explanations and offer customized exercises, thereby catering to varying proficiency levels. Individualized feedback is another key feature, where ChatGPT provides real-time responses and suggestions based on the student's interactions, helping them understand and correct their mistakes. This personalized approach supports deeper learning and retention by addressing each student's unique challenges and strengths. Additionally, tailored tutoring with ChatGPT can offer targeted support in specific subjects or skills, allowing students to progress at their own pace. Overall, ChatGPT's ability to deliver customized educational content and feedback significantly enhances the effectiveness of personalized learning environments.

2.Homework and Assignment Assistance

Students often seek help with homework and assignments. ChatGPT can assist by guiding them through problem-solving processes, explaining concepts, and suggesting resources for further study. This support helps students develop a deeper understanding of the material and improves their academic performance (Jones, 2024).

ChatGPT revolutionizes personalized learning by offering targeted guidance on assignments, ensuring that students receive support tailored to their specific needs. When tackling complex problems, ChatGPT can provide step-by-step problem-solving tips, helping students navigate through difficulties and develop a deeper understanding of the subject matter. The AI's ability to break down complex concepts into simpler explanations allows students to grasp challenging topics more effectively. By addressing individual queries and providing customized examples, ChatGPT enhances comprehension and retention of key concepts. This targeted

assistance enables students to work through assignments with greater confidence and skill. Furthermore, the real-time feedback and guidance from ChatGPT foster a more interactive and engaging learning experience, promoting active learning and independent problem-solving.

3.Administrative Support and Grading

In administrative contexts, ChatGPT can streamline tasks such as grading and managing student queries. By automating routine tasks, educators can allocate more time to interactive and instructional activities (Taylor et al., 2023). Additionally, its ability to handle a large volume of queries simultaneously can enhance the efficiency of student support services (Brown, 2023).

ChatGPT can facilitate the development and refinement of automated grading systems by analyzing patterns in student submissions and suggesting adjustments to grading criteria. Its ability to handle large volumes of data efficiently allows for more accurate tracking of student progress and performance metrics. Moreover, ChatGPT can assist in drafting detailed reports and communications, such as progress updates and academic reviews, which traditionally consume considerable time for educators. By streamlining these administrative processes, ChatGPT enhances the overall educational experience by ensuring that faculty members can dedicate more time to pedagogical activities and personalized student engagement.

4.Language Learning and Practice

For language learners, ChatGPT offers opportunities for practice and conversation in a low-pressure environment. It can simulate dialogues, provide grammar and vocabulary exercises, and offer immediate feedback, which contributes to language acquisition and fluency (Adams & Lee, 2024). In language learning and practice, ChatGPT offers personalized and interactive experiences by engaging learners in real-time conversations, which enhances their fluency and comprehension. The AI can provide instant feedback on grammar, vocabulary, and pronunciation, allowing learners to correct mistakes and improve their language skills effectively. Through tailored exercises and contextual practice, ChatGPT adapts to individual proficiency levels, offering a customized learning experience that evolves with the learner's progress. Additionally, it can simulate various conversational scenarios, helping learners build confidence and apply their language skills in practical situations.

ChatGPT can be best utilized for natural language processing tasks, such as language translation, text summarization, and question-answering systems. In education, GPT-based tools and activities can be used to generate writing prompts, provide feedback on student writing, or even create personalized learning experiences (Božić, Velibor et al(2023). ChatGPT's ability to generate diverse language practice scenarios helps learners encounter and navigate a wide range of linguistic contexts, from formal writing to casual dialogue. It also supports language learners by offering contextual explanations and cultural insights, which enrich their understanding and application of the language. Moreover, the AI's 24/7 availability provides consistent practice opportunities, enabling learners to study at their own pace and convenience, which can accelerate language acquisition and retention.

II. Benefits

The use of ChatGPT in education presents a groundbreaking opportunity to enhance the learning experience by providing students with instant access to information and personalized assistance. This AI-driven tool can help bridge gaps in understanding, offering explanations and support tailored to individual needs, thereby promoting more effective and independent learning. Teachers can also benefit from ChatGPT by utilizing it as a resource for generating ideas, lesson plans, and even automating repetitive tasks, freeing up time for more interactive and meaningful teaching. The integration of AI in education has the potential to create a more dynamic and engaging learning environment. As we embrace these technological advancements, the benefits of ChatGPT in fostering a more accessible and customized educational experience become increasingly clear.

1. Accessibility and Flexibility

ChatGPT provides 24/7 access to educational support, enabling students to seek help outside of regular classroom hours. This flexibility is particularly beneficial for learners in different time zones or those with varying schedules (Wilson, 2023). ChatGPT-supported learning platforms offer unparalleled accessibility by providing instant, on-demand educational assistance that can be accessed from anywhere at any time. This flexibility enables learners to engage with educational content at their own pace and convenience, accommodating diverse schedules and learning needs.

Additionally, these platforms can be tailored to accommodate various learning styles and accessibility needs, including support for different languages and adaptive learning features. The ability to integrate with other digital tools and resources further enhances the learning experience by providing a cohesive and adaptable educational environment. This adaptability ensures that learners with varying levels of prior knowledge and technical expertise can benefit from personalized and inclusive educational opportunities.

2. Scalability

The scalability of ChatGPT allows it to support a large number of students simultaneously, making it a viable tool for institutions with high student-to-teacher ratios (Miller & Green, 2023).

ChatGPT-supported learning platforms demonstrate significant scalability by accommodating an expanding number of users without compromising the quality of interaction or support. The AI's capacity to handle concurrent queries from multiple learners simultaneously ensures that educational resources are available to a broad audience. Its ability to adapt to different educational contexts and subjects allows for easy integration into diverse curricula and institutional settings. Additionally, as the system evolves, it can incorporate new content and updates seamlessly, keeping pace with educational advancements and user needs. This scalability not only enhances the reach of educational programs but also ensures consistent and personalized learning experiences for all users.

3. Cost-Effectiveness

Implementing ChatGPT can reduce costs associated with traditional tutoring and administrative tasks, offering a cost-effective alternative for educational institutions (Smith, 2024). ChatGPT-supported learning platforms offer significant cost-effectiveness by reducing the need for extensive human resources, such as tutors and administrative staff, through automated support and feedback. The scalability of AI-driven solutions means that educational institutions can serve a large number of students without proportional increases in costs. Additionally, the reduction in administrative overhead and grading time translates into lower operational expenses. By providing immediate and on-demand support, these platforms minimize the need for costly supplementary learning materials and resources. Overall, the integration of ChatGPT can lead to more efficient use of educational funds while maintaining high-quality learning experiences.

III. Challenges and Considerations

1. Accuracy and Reliability

Despite its capabilities, ChatGPT is not infallible. The model can occasionally provide incorrect or misleading information, necessitating careful oversight and verification by educators (Taylor, 2023). The accuracy and reliability of using ChatGPT in education are crucial factors that directly impact the quality of learning. While ChatGPT can provide quick answers and explanations, it may occasionally produce incorrect or misleading information, which can confuse students and lead to misunderstandings. Educators must therefore carefully evaluate the AI's outputs to ensure that the information aligns with educational standards and is factually accurate. Overreliance on ChatGPT without proper verification

can undermine trust in the learning process and potentially spread misinformation. Ensuring the AI is used as a supplementary tool, with proper oversight, is essential for maintaining educational integrity

2. Ethical and Privacy Concerns

The use of AI in education raises ethical concerns regarding data privacy and the potential for bias. Ensuring the responsible use of ChatGPT involves addressing these issues and implementing safeguards to protect student information (Brown & Davis, 2024). The use of ChatGPT in education raises ethical and privacy concerns, particularly regarding the handling and storage of sensitive student data. As students interact with AI, there is a risk that personal information could be inadvertently shared or used in ways that compromise their privacy. Additionally, the ethical implications of AI-generated content, such as the potential for biased or inaccurate information, must be carefully considered to ensure that students receive fair and reliable guidance in their learning journey.

3. Dependency and Overreliance

There is a risk that students might become overly reliant on ChatGPT for assistance, potentially undermining their problem-solving skills and independent learning abilities (Jones, 2024). The dependency and overreliance on ChatGPT in education can lead to students becoming overly dependent on AI for problem-solving, critical thinking, and even basic learning tasks, potentially undermining their ability to think independently. While ChatGPT offers valuable support by providing quick information and explanations, relying too heavily on it can diminish students' motivation to explore concepts deeply or engage in self-directed learning. Teachers might also face challenges in ensuring that students are truly understanding the material, as AI-generated answers may mask gaps in knowledge. Over time, this reliance could result in a generation of learners who are proficient at using AI tools but lack the fundamental skills needed for critical analysis and innovation. It's crucial to strike a balance between utilizing AI as a learning aid and fostering independent intellectual growth to avoid these pitfalls.

Educational outcomes

The application areas, overall benefits and challenges of ChatGPT in education can be summarized as educational outcomes as listed below.

1. **Enhanced Personalized Learning:** ChatGPT can provide tailored support to individual students, helping them learn at their own pace and according to their specific needs. This can lead to improved understanding and retention of material, as students receive explanations and resources that are directly relevant to their learning gaps.
2. **Increased Engagement:** By offering interactive and immediate responses, ChatGPT can make learning more engaging for students. It can stimulate curiosity and encourage active participation, as students can ask questions and explore topics in real-time without the need to wait for a teacher's availability.
3. **Support for Self-Directed Learning:** ChatGPT empowers students to take control of their learning by providing on-demand assistance. This can foster a greater sense of independence and confidence in their ability to find and understand information on their own.
4. **Efficiency in Learning:** For both students and educators, ChatGPT can streamline the learning process by quickly addressing questions, generating study materials, and even automating certain tasks like grading or feedback. This efficiency can free up time for deeper exploration of complex subjects.
5. **Bridging Gaps in Education:** ChatGPT can be particularly beneficial in underserved or resource-limited educational settings by providing access to knowledge and learning support that might otherwise be unavailable. This can help bridge educational inequalities and improve outcomes for students in diverse contexts.
6. **Development of Critical Thinking Skills:** When used effectively, ChatGPT can challenge students to think critically by prompting them to question and analyze the information it provides. Teachers can use the AI as a tool to stimulate discussions and deeper exploration of topics, promoting higher-order thinking skills.

7. **Cost efficiency:** The use of ChatGPT in education can lead to significant cost efficiency by reducing the need for additional teaching resources, such as tutors or supplementary materials, as it provides instant, scalable support to students. Additionally, ChatGPT can automate routine tasks like grading and generating content, allowing educators to allocate their time and resources more effectively, ultimately lowering overall educational costs.

Overall, the educational outcomes of using ChatGPT are closely tied to how it is implemented and the extent to which it is used to complement traditional teaching methods, rather than replace them.

IV. Future Prospects

The future of ChatGPT in education appears promising, with ongoing advancements likely to enhance its capabilities. Future developments may focus on improving accuracy, integrating with other educational technologies, and expanding its functionality to better meet diverse educational needs (Xu, 2024). Additionally, exploring hybrid models that combine AI with human instruction could offer a balanced approach to leveraging AI in education (Adams, 2024). Adeshola, I., & Adepoju, A. P., recommended that the educational institutions can promote academic integrity by adopting clear policies and guidelines and frameworks for assessments that include limited use of AI-generated text. update the assessment methods and institutional policies in schools and universities. Instructor training and student education are also essential to respond to the impact of ChatGPT on the educational environment (Lo, Chung Kwan).

The future prospects of using ChatGPT in education are promising, as it holds the potential to revolutionize personalized learning by adapting to individual student needs and providing tailored support. As AI technology advances, ChatGPT could become more sophisticated, offering deeper insights and facilitating more interactive and engaging learning experiences. It may also assist educators in creating innovative teaching methods, automating routine tasks, and providing real-time feedback, thereby enhancing the overall educational environment. However, to fully realize these benefits, ongoing improvements in accuracy, reliability, and ethical considerations will be essential. The successful integration of ChatGPT into education will depend on balancing technological innovation with human oversight to ensure it complements rather than replaces traditional learning methods.

1. **Integration with other technology**

The future prospects of ChatGPT in education are particularly exciting when considering its integration with other technologies, such as virtual reality (VR), augmented reality (AR), and adaptive learning platforms. By combining ChatGPT with VR and AR, educators can create immersive, interactive learning experiences where AI-powered tutors guide students through complex concepts in a more engaging way. Integration with adaptive learning systems could further personalize education, with ChatGPT dynamically adjusting content based on real-time assessments of student performance. Additionally, ChatGPT could be linked with data analytics tools to provide educators with deeper insights into student progress and learning patterns. This convergence of technologies holds the promise of transforming education into a more connected, responsive, and effective system for both students and teachers.

2. **Improved accuracy and content understanding:** The future prospects of ChatGPT in education are closely tied to advancements in its accuracy and content understanding, which will enhance its effectiveness as a learning tool. As AI models become more sophisticated, ChatGPT will be better equipped to provide precise, contextually accurate responses that align with educational standards, reducing the risk of misinformation. Improved content understanding will also allow ChatGPT to offer more nuanced explanations and support deeper learning, making it a more reliable resource for both students and educators. These improvements will enable ChatGPT to play a more central role in the educational process, providing high-quality assistance that complements traditional teaching methods.
3. **Ethical and privacy safeguards:** The future application of ChatGPT in education will increasingly focus on strengthening ethical and privacy safeguards to protect students' sensitive information and ensure

responsible AI use. As AI technology advances, there will be greater emphasis on implementing robust data protection measures and ethical guidelines to prevent misuse or unintended consequences. Ensuring transparency in how AI systems operate and interact with students will be crucial in maintaining trust and promoting safe educational environments. These safeguards will be essential in realizing the full potential of ChatGPT while minimizing risks and upholding the integrity of the educational experience.

4. Hybrid learning models: The future prospects of ChatGPT in education point to its significant role in enhancing hybrid learning models, where a blend of in-person and online instruction becomes the norm. ChatGPT can serve as an accessible, on-demand tutor that supports students outside of the classroom, providing personalized assistance and extending the reach of teachers. In hybrid models, ChatGPT can help bridge the gap between physical and digital learning environments, offering consistent support across different formats. This AI-driven tool can also facilitate collaborative learning by connecting students with resources and peers in both online and in-person settings. As hybrid learning models evolve, ChatGPT's integration will be key to creating flexible, adaptive educational experiences that cater to diverse learning needs.

Role of ChatGPT in Education :

By comprehending the above findings, this study proposes a landscape model of ChatGPT in education. The model includes the key applications, Educational outcomes and the Future enhancements as discussed above. The key application areas includes Personalized learning and tutoring, Homework and Assignment Assistance, Administrative Support and Grading and Language Learning and Practice. The educational outcomes includes Enhanced personalized learning, Increased engagement, Support for self-directed learning, Efficiency in Learning, Bridging gaps in education, Development of critical thinking skills and Cost efficiency. The future prospects includes Integration with other technology, Improved accuracy and content understanding, Ethical and privacy safeguards and Hybrid learning models.

Conclusion

ChatGPT presents numerous opportunities for improving educational practices, from personalized learning to administrative support. However, its integration into educational settings must be managed carefully to address challenges related to accuracy, ethics, and dependency. The integration of ChatGPT in education offers significant benefits and opportunities, particularly in enhancing personalized learning and providing instant, accessible support for students. By leveraging AI, educators can create more dynamic and flexible learning environments, where students can explore concepts at their own pace and receive tailored guidance. ChatGPT can also alleviate some of the workload for teachers by automating routine tasks, allowing them to focus on more meaningful interactions with students. As the technology continues to evolve, the potential to innovate and enrich educational experiences will only grow. However, it's essential to approach this integration thoughtfully, ensuring that AI complements traditional teaching methods and supports, rather than replaces, human-driven learning. By continuing to explore and refine its applications, educators and policymakers can harness the potential of ChatGPT to enhance learning outcomes and support educational innovation.

Bibliography

1. Adams, J. L., Cymerys, R., Szuster, K., Hekman, D., Salo, Z., Solanki, R.& Haibe-Kains, B. (2024). Health Data Nexus: An Open Data Platform for AI Research and Education in Medicine. medRxiv, 2024-08.
2. Adeshola, I., & Adepoju, A. P. (2023). The opportunities and challenges of ChatGPT in education. *Interactive Learning Environments*, 1–14. <https://doi.org/10.1080/10494820.2023.2253858>
3. Allam, H., Dempere, J., Akre, V., Parakash, D., Mazher, N., & Ahamed, J. (2023, May). Artificial intelligence in education: an argument of Chat-GPT use in education. In 2023 9th International Conference on Information Technology Trends (ITT) (pp. 151-156). IEEE.
4. Božić, Velibor, and Indrasen Poola. "Chat GPT and education." Preprint (2023).

5. Castillo, A. G. R., Rivera, H. V. H., Teves, R. M. V., Lopez, H. R. P., Reyes, G. Y., Rodriguez, M. A. M., ... & Arias-González, J. L. (2023). Effect of Chat GPT on the digitized learning process of university students. *Journal of Namibian Studies: History Politics Culture*, 33, 1-15.
6. Fuchs, K. (2023, May). Exploring the opportunities and challenges of NLP models in higher education: is Chat GPT a blessing or a curse?. In *Frontiers in Education* (Vol. 8, p. 1166682). Frontiers Media SA.
7. Lo, Chung Kwan. "What is the impact of ChatGPT on education? A rapid review of the literature." *Education Sciences* 13.4 (2023): 410.
8. Mhlanga, D. (2023). The value of open AI and chat GPT for the current learning environments and the potential future uses. Available at SSRN 4439267.
9. Shidiq, M. (2023, May). The use of artificial intelligence-based chat-gpt and its challenges for the world of education; from the viewpoint of the development of creative writing skills. In *Proceeding of international conference on education, society and humanity* (Vol. 1, No. 1, pp. 353-357).
10. Xu, X., Chen, Y., & Miao, J. (2024). Opportunities, challenges, and future directions of large language models, including ChatGPT in medical education: a systematic scoping review. *Journal of Educational Evaluation for Health Professions*, 21.
11. Yu, H. (2023). Reflection on whether Chat GPT should be banned by academia from the perspective of education and teaching. *Frontiers in Psychology*, 14, 1181712.
12. OpenAI. (2024). *ChatGPT* (September 2024 version) [Large language model]. <https://chat.openai.com/>

